$*\{J\} = (SB) \cap P$

J(x ,y ,z) tq :

$$\begin{cases} x = \beta \\ y = \beta \\ z = 1 - \beta \\ x + y = a \end{cases}$$

$\beta + \beta = a \Rightarrow \beta = \frac{a}{2}$

D'où $J\left(\frac{a}{2}, \frac{a}{2}, 1 - \frac{a}{2}\right)$

De même :

K(0, a , 1-a) ; L(0,a,0) ; M(a,0,0)

b)$\overrightarrow{IK}\begin{pmatrix} -a \\ a \\ 0 \end{pmatrix}$ $\overrightarrow{ML}\begin{pmatrix} -a \\ a \\ 0 \end{pmatrix}$

$\overrightarrow{IM}\begin{pmatrix} 0 \\ 0 \\ a-1 \end{pmatrix}$

on a :

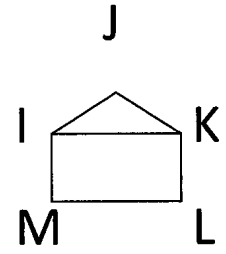
$\overrightarrow{IK} = \overrightarrow{ML}$ d'où $IKLM$ est un parallélogramme

$\overrightarrow{IK}.\overrightarrow{IM} = 0 \Rightarrow \overrightarrow{IK} \perp \overrightarrow{IM}$

D'où IKLM est un rectangle

c)A=aire(IKLM)+aire(IJK)

= A1+A2



A1=IKxIM carIKLMestun rectangle.

$A_1 = \sqrt{2a^2}.\sqrt{(a-1)^2} = a.\sqrt{2}.|a-1|$

$A_1 = \sqrt{2}.a(1-a)$

$A_2 = \frac{1}{2}\left\|\overrightarrow{IJ} \wedge \overrightarrow{IK}\right\|$

$\overrightarrow{IJ}\begin{pmatrix} \frac{-\alpha}{2} \\ \frac{\alpha}{2} \\ \frac{\alpha}{2} \end{pmatrix}$; $\overrightarrow{IK}\begin{pmatrix} -\alpha \\ \alpha \\ 0 \end{pmatrix}$

$\overrightarrow{IJ} \wedge \overrightarrow{IK}\begin{pmatrix} -\frac{a^2}{2} \\ \frac{a^2}{2} \\ 0 \end{pmatrix}$

Qarray.tn -Aqra Blech- Qarray.tn